

APPENDIX 8.1A

Construction Emission Estimates and Dispersion Modeling

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The contents of Appendix 8.1A include:

- Methodology used to estimate construction emissions and perform dispersion modeling,
- A summary of the ISCST3 model (demolition, power plant construction, and overlap) results (Table 8.1A.1),
- A summary of the construction emission calculations (Tables 8.1A.2a through 8.1A.5v),
- A summary of the emission rates and input summaries used for ISCST3 modeling (Tables 8.1A.6 and 8.1A.7),
- An excerpt from the electronic file used to convert 1-hour NOx to NO₂ using the SCAQMD "Localized Significance Threshold Methodology", June 2003 (Tables 8.1A.8 a-c) (note: the complete electronic file is included in the modeling DVDs submitted as part of this application), and,
- All of the ISCST3 construction modeling files submitted on DVD

Construction Emission Estimate Methodology

Construction Emissions

The proposed 14 month construction schedule consists of five months of demolition (months 1-5) and eleven months of power plant construction (months 4-14). To evaluate the emissions expected to occur during the construction period, the emission sources were divided into two categories: sources within the boundary of the proposed power plant site (i.e., onsite) and activities related to the project which occur outside the boundary (i.e., offsite). Onsite construction emissions would be generated during demolition of existing structures and power plant construction. Onsite emission sources include exhaust emissions from construction equipment and motorized vehicles, and fugitive dust emissions. During demolition, the contractor hired to demolish the existing structures would mitigate asbestos emissions by complying with all local, state, and federal laws and regulations. In addition, painted steel members, which may contain lead, would be torch cut and removed in compliance with all local, state, and federal laws and regulations.

Offsite construction emissions would be generated during construction of the natural gas pipeline and potable water line, and offsite motorized vehicle travel resulting from demolition and power plant construction. Offsite emission sources include the exhaust emissions from construction equipment and motorized vehicles used to install the project related linear (i.e., the natural gas and potable water line), as well as, the exhaust emissions from motor vehicles traveling to and from the proposed work site.

The offsite linear construction would include a 1,300-foot long (8-12 -inch diameter) potable water line and the proposed 7-mile long 12-inch diameter natural gas pipeline.

Construction emissions were estimated for the following sources:

- Onsite and offsite construction equipment engine exhaust.
- Fugitive PM₁₀ from bulldozing, vehicle travel on unpaved construction site areas, and
- storage pile wind erosion.
- Onsite and offsite motor vehicle engine exhaust and entrained paved road dust.

Construction Activities and Equipment Requirements

Demolition and power plant construction activities are anticipated to take place over approximately 14 months, including the commissioning phase. Construction of the natural gas, recycled water, and sewer pipelines includes trenching, installing pipe, backfilling the trench, and repaving. The construction schedule for both onsite and offsite construction is based on one eight-hour shift per day, five days per week, and twenty-two days per month. A summary of the equipment and motor vehicle requirements for both onsite and offsite construction are contained in Tables 8.1A.3b-d, Tables 8.1A4g, j-k, n-o, r-s, and v.

Emission Factors

Construction emissions were based on the methodologies contained in the SCAQMD CEQA handbook (1993 and 2006) and the USEPA AP-42 guidance. A detailed breakdown of the algorithms and emission factors used to estimate construction emissions are included with Tables 8.1A.3 g-h and Tables 8.1A.4a, f, and g.

Assessment of Construction Related Impacts on Ambient Air Quality

Onsite emissions from demolition and construction of the power plant were estimated for each month of the 14 month construction schedule. Based on the construction schedule, demolition and power plant construction activities would overlap during months 4 and 5. Therefore, three modeling scenarios were evaluated to determine whether the maximum modeled pollutant concentrations would result from demolition alone, power plant construction alone, or the overlap. For each scenario, the peak monthly on-site emissions were identified and used to determine the emission rates for the dispersion modeling analysis. For all sources except for the on-site construction vehicles, the peak hourly emissions entered in ISCST3 were calculated by dividing the peak monthly emissions by the number of working days proposed (i.e., 22 days per month) and the proposed working hours in a day (i.e. 8 hours per day). For on-site vehicles, the maximum miles traveled in one hour were used to estimate hourly emission rates and the average miles traveled in one day were used to estimate daily emissions. The annual hourly emission rates entered into ISCST3 were determined by dividing the total annual emissions by 8,760 hours.

The EPA-approved ISCST3 model was used to estimate the ambient impacts from construction activity. ISCST3 default options were chosen with the exception of the CALMs

processing routine. The SCAQMD 1981 meteorological data from the Rubidoux monitoring station was used for the modeling analysis. The demolition and construction sites were represented as area sources. For exhaust emissions, a plume height of 4.6 meters (15 feet) was used to represent an average release height from the construction equipment. For dust emissions, a release height of two meters was used. Emissions were divided into three categories: on-site exhaust, fugitive dust from vehicle and construction equipment, and windblown fugitive dust. A receptor grid was set up starting from the property boundary and extending to approximately two kilometers in all directions. Receptor spacing was 30 meters along the demolition and construction boundaries out to 500 meters and 100 meter spacing out to two kilometers. A summary of the emission factors used for the dispersion modeling are located in Tables 8.1A-2 through 8.1A-6.

The first high concentrations from ISCST3 output were reported with the exception of the 1-hour NO₂ concentration. The maximum NO₂ concentration was derived from the predicted 1-hour NOx concentrations at each receptor and the NO₂ to NOx ratios as a function of downwind distance, as discussed in the SCAQMD "Localized Significance Threshold Methodology," June 2003. The PM_{2.5} concentration from exhaust and fugitive sources assumes all PM from exhaust emissions are less than 2.5 micron and 21 percent of the fugitive PM emissions are less than 2.5 micron (SCAQMD LST, June 2003). The results of the analysis (Table 8.1A.1) indicate that the maximum construction impacts will be below the ambient air quality standards for each of the criteria pollutants and averaging periods with the exception of the 24-hour PM₁₀ compared to the SCAQMD threshold, the 24-hour PM_{2.5} averaging period, and the annual PM₁₀ and PM_{2.5} averaging periods. For both PM₁₀ and PM_{2.5}, the 24-hour and the annual background concentrations exceed the ambient air quality standards.

TABLE 8.1A.1
ISCST3 Results for On-site demolition, power plant construction, and overlap

Pollutant	Modeled Concentration - Demolition ($\mu\text{g}/\text{m}^3$)	Modeled Concentration – Power Plant Construction ($\mu\text{g}/\text{m}^3$)	Modeled Concentration - Overlap ($\mu\text{g}/\text{m}^3$)	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$) ^a	Total Concentration ($\mu\text{g}/\text{m}^3$)	Significance Threshold or Lowest Ambient Air Quality Standard ($\mu\text{g}/\text{m}^3$) ^b
1-hour NO ₂ ^c	123.5	136.3	149.7	150	188.1	338	470
Annual NO ₂	-	-	-	40.4	44.6	85.0	100
1-hour CO	398.0	505.7	468.2	506	9,162	9,667	23,000
8-hour CO	147.8	255.4	236.7	255	4,237	4,493	10,000
1-hour SO ₂	5.10	4.91	5.24	5	52.4	57.6	655
3-hour SO ₂ ^d	3.77	4.07	4.34	4.3	41.9	46.2	1300
24-hour SO ₂	0.82	1.05	1.12	1.1	39.3	40.4	105
Annual SO ₂	-	-	-	0.17	10.5	10.6	80
24-hour PM ₁₀	121.5	85.02	75.89	122	164	286	10.4
Annual PM ₁₀	-	-	-	18.4	58.5	76.9	1
24-hour PM _{2.5} ^e	32.2	30.3	27.7	32	104	137	65
Annual PM _{2.5} ^e	-	-	-	5.9	27.5	33.4	12

^a Background concentrations were the highest concentrations monitored during 2002 through 2004.

^b For the 24-hour and annual PM₁₀, the concentration is the SCAQMD significance threshold. For the other pollutants and averaging periods, the concentrations are the lowest ambient air quality standard, either California or federal.

^c The maximum 1-hour NO₂ concentration was derived from the predicted 1-hour NO_x concentrations at each receptor and the NO₂ to NO_x ratios as a function of downwind distance, as discussed in the SCAQMD "Localized Significance Threshold Methodology (LST)", June 2003.

^d The 3-hour averaging period for SO₂ is a secondary federal standard.

^e Reported PM_{2.5} concentration from exhaust and fugitive sources assumes all PM from exhaust emissions are less than 2.5 micron and for fugitive emissions, 21 percent of the fugitive PM emissions are less than 2.5 micron (SCAQMD LST, June 2003).

The tables summarizing the construction emission calculations, ISCST3 inputs, and LST excerpts are included after the following table list.

Onsite Construction Emissions Tables

Tables 8.1A.2a through 8.1A.2t summarize the onsite construction emissions from both demolition and power plant construction. Demolition occurs during months 1 through 5 and power plant construction occurs during months 4 through 14.

Table 8.1A.2a Onsite Demolition Equipment CO Emissions

Table 8.1A.2b Onsite Demolition Equipment VOC Emissions

Table 8.1A.2c Onsite Demolition Equipment NOx Emissions

Table 8.1A.2d Onsite Demolition Equipment SOx Emissions

Table 8.1A.2e Onsite Demolition Equipment PM₁₀ Emissions

Table 8.1A.2f Onsite Demolition Motor Vehicle CO Emissions

Table 8.1A.2g Onsite Demolition Motor Vehicle VOC Emissions

Table 8.1A.2h Onsite Demolition Motor Vehicle SOx Emissions

Table 8.1A.2i Onsite Demolition Motor Vehicle NOx Emissions

Table 8.1A.2j Onsite Demolition Motor Vehicle PM₁₀ Emissions

Table 8.1A.2k Onsite Power Plant Construction Equipment CO Emissions

Table 8.1A.2l Onsite Power Plant Construction Equipment VOC Emissions

Table 8.1A.2m Onsite Power Plant Construction Equipment NOx Emissions

Table 8.1A.2n Onsite Power Plant Construction Equipment SOx Emissions

Table 8.1A.2o Onsite Power Plant Construction Equipment PM₁₀ Emissions

Table 8.1A.2p Onsite Power Plant Construction Motor Vehicle CO Emissions

Table 8.1A.2q Onsite Power Plant Construction Motor Vehicle VOC Emissions

Table 8.1A.2r Onsite Power Plant Construction Motor Vehicle SOx Emissions

Table 8.1A.2s Onsite Power Plant Construction Motor Vehicle NOx Emissions

Table 8.1A.2t Onsite Power Plant Construction Motor Vehicle PM₁₀ Emissions

Tables 8.1A.3a through 8.1A.3h summarize the fugitive dust emissions from demolition and power plant construction.

Table 8.1A.3a Onsite Demolition and Power Plant Construction Fugitive PM₁₀ Monthly Activity Levels

Table 8.1A.3b Onsite Demolition and Power Plant Construction Fugitive PM₁₀ Emissions

- Table 8.1A.3c Onsite Demolition Motor Vehicle Activity
- Table 8.1A.3d Onsite Demolition Motor Vehicle Fugitive PM₁₀ Emissions
- Table 8.1A.3e Onsite Power Plant Construction Motor Vehicle Activity
- Table 8.1A.3f Onsite Power Plant Construction Motor Vehicle Fugitive PM₁₀ Emissions
- Table 8.1A.3g Fugitive PM₁₀ Emission Factors for Unpaved Roads
- Table 8.1A.3h Fugitive PM₁₀ Emission Factors for Demolition, Bulldozing and Wind Erosion of Storage Piles
- Tables 8.1A.4a through 8.1A.4g contain the equations, number of equipment, and emission factors used to calculate onsite demolition and power plant construction emissions.
- Table 8.1A.4a Equations Used to Calculate Exhaust Emissions
- Table 8.1A.4b Number of Onsite Demolition Equipment
- Table 8.1A.4c Number of Onsite Demolition Motor Vehicles
- Table 8.1A.4d Number of Onsite Power Plant Construction Equipment
- Table 8.1A.4e Number of Onsite Power Plant Construction Motor Vehicles
- Table 8.1A.4f Demolition and Power Plant Construction Emission Factors
- Table 8.1A.4g Motor Vehicle Emission Factors
- Table 8.1A.4h Onsite Demolition Motor Vehicles Activity Assumptions
- Table 8.1A.4i Onsite Power Plant Construction Motor Vehicles Activity Assumptions

Offsite Construction Emission Tables

Tables 8.1A.5a through 8.1A.5v summarize the offsite motor vehicle emissions and offsite emissions from construction of the natural gas pipeline and construction of the potable water line.

- Table 8.1A.5a Offsite Motor Vehicle Usage during Demolition
- Table 8.1A.5b Offsite Motor Vehicle CO Emissions (Demolition)
- Table 8.1A.5c Offsite Motor Vehicle VOC Emissions (Demolition)
- Table 8.1A.5d Offsite Motor Vehicle SOx Emissions (Demolition)
- Table 8.1A.5e Offsite Motor Vehicle NOx Emissions (Demolition)
- Table 8.1A.5f Offsite Motor Vehicle PM₁₀ Emissions (Demolition)
- Table 8.1A.5g Offsite Motor Vehicle Emission Factors
- Table 8.1A.5h Offsite Motor Vehicle Usage during Power Plant Construction
- Table 8.1A.5i Offsite Motor Vehicle CO Emissions (Power Plant Construction)

- Table 8.1A.5j Offsite Motor Vehicle VOC Emissions (Power Plant Construction)
- Table 8.1A.5k Offsite Motor Vehicle SO_x Emissions (Power Plant Construction)
- Table 8.1A.5l Offsite Motor Vehicle NO_x Emissions (Power Plant Construction)
- Table 8.1A.5m Offsite Motor Vehicle PM₁₀ Emissions (Power Plant Construction)
- Table 8.1A.5n Offsite Natural Gas Pipeline Construction Equipment Requirements
- Table 8.1A.5o Offsite Natural Gas Pipeline Construction Equipment Emission Factors
- Table 8.1A.5p Offsite Emissions from Natural Gas Pipeline Construction
- Table 8.1A.5q Offsite VOC Emissions from Paving during Natural Gas Pipeline Construction
- Table 8.1A.5r Offsite Motor Vehicle Usage during Natural Gas Pipeline Construction
- Table 8.1A.5s Offsite Potable Water Line Construction Equipment Requirements
- Table 8.1A.5t Offsite Potable Water Line Construction Equipment Emission Factors
- Table 8.1A.5u Offsite Emissions from Potable Water Line Construction
- Table 8.1A.5v Offsite Motor Vehicle Usage during Potable Water Line Construction

ISC Input Summary

- Table 8.1A.6 Summary of Emission Rates used for Dispersion Modeling
- Table 8.1A.7 ISC Construction Model Input Summary

Localized Significance Threshold Methodology

- Table 8.1A.8a LST Conversion of 1-Hour NO_x to NO₂ - Demolition
- Table 8.1A.8b LST Conversion of 1-Hour NO_x to NO₂ - Construction
- Table 8.1A.8c LST Conversion of 1-Hour NO_x to NO₂ - Overlap

Table 8.1A.2a: Onsite Demolition Equipment CO Emissions

Onsite Equipment	CO Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bulldozer	360.45	180.22	0	0	0									
Excavator	166.14	166.14	0	0	0									
Grader	0	0	96.10	96.10	96.10									
Backhoe/Front End Loader	147.49	73.74	73.74	73.74	0									
Rubber Tired Crane	62.48	62.48	62.48	0	0									
Total (lbs/month, E _m)	736.56	482.59	232.32	169.84	96.10									
Total (lbs/day, E _d)	33.48	21.94	10.56	7.72	4.37									
Total (lbs/hr, E _h)	4.19	2.74	1.32	0.97	0.55									
Total (ton/yr, E _t)	0.86													

Demolition occurs during months 1 through 5.

Table 8.1A.2b: Onsite Demolition Equipment VOC Emissions

Onsite Equipment	VOC Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bulldozer	74.27	37.14	0	0	0									
Excavator	34.14	34.14	0	0	0									
Grader	0	0	21.82	21.82	21.82									
Backhoe/Front End Loader	44.00	22.00	22.00	22.00	0									
Rubber Tired Crane	15.14	15.14	15.14	0	0									
Total (lbs/month, E _m)	167.55	108.42	58.96	43.82	21.82									
Total (lbs/day, E _d)	7.62	4.93	2.68	1.99	0.99									
Total (lbs/hr, E _h)	0.95	0.62	0.34	0.25	0.12									
Total (ton/yr, E _t)	0.20													

Demolition occurs during months 1 through 5.

Table 8.1A.2c: Onsite Demolition Equipment NO_x Emissions

Onsite Equipment	NO _x Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bulldozer	991.58	495.79	0	0	0									
Excavator	400.58	400.58	0	0	0									
Grader	0	0	253.79	253.79	253.79									
Backhoe/Front End Loader	287.23	143.62	143.62	143.62	0									
Rubber Tired Crane	180.05	180.05	180.05	0	0									
Total (lbs/month, E _m)	1859	1220	577	397.41	253.79									
Total (lbs/day, E _d)	84.52	55.46	26.25	18.06	11.54									
Total (lbs/hr, E _h)	10.57	6.93	3.28	2.26	1.44									
Total (ton/yr, E _t)	2.15													

Demolition occurs during months 1 through 5.

Table 8.1A.2d: Onsite Demolition Equipment SO_x Emissions

Onsite Equipment	SO _x Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bulldozer	4.77	2.39	0	0	0									
Excavator	2.57	2.57	0	0	0									
Grader	0	0	1.46	1.46	1.46									
Backhoe/Front End Loader	1.21	0.61	0.61	0.61	0.00									
Rubber Tired Crane	1.03	1.03	1.03	0	0									
Total (lbs/month, E_m)	9.59	6.59	3.10	2.06	1.46									
Total (lbs/day, E_d)	0.44	0.30	0.14	0.09	0.07									
Total (lbs/hr, E_h)	0.05	0.04	0.02	0.01	0.01									
Total (ton/yr, E_j)	0.01													

Demolition occurs during months 1 through 5.

Table 8.1A.2e: Onsite Demolition Equipment PM₁₀ Emissions

Onsite Equipment	PM ₁₀ Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bulldozer	39.42	19.71	0	0	0									
Excavator	21.12	21.12	0	0	0									
Grader	0	0	13.02	13.02	13.02									
Backhoe/Front End Loader	29.22	14.61	14.61	14.61	0									
Rubber Tired Crane	9.15	9.15	9.15	0	0									
Total (lbs/month, E_m)	98.91	64.59	36.78	27.63	13.02									
Total (lbs/day, E_d)	4.50	2.94	1.67	1.26	0.59									
Total (lbs/hr, E_h)	0.56	0.37	0.21	0.16	0.07									
Total (ton/yr, E_j)	0.12													

Demolition occurs during months 1 through 5.

Table 8.1A.2f: Onsite Demolition Motor Vehicle CO Emissions

Table 8.1A.2g: Onsite Demolition Motor Vehicle VOC Emissions

Table 8.1A.2h: Onsite Demolition Motor Vehicle SO_x Emissions

Table 8.1A.2i: Onsite Demolition Motor Vehicle NO_x Emissions

Table 8.1A.2j: Onsite Demolition Motor Vehicle PM₁₀ Emissions

Table 8.1A.2k: Onsite Power Plant Construction Equipment CO Emissions

Table 8.1A.2I: Onsite Power Plant Construction Equipment VOC Emissions

Table 8.1A.m: Onsite Power Plant Construction Equipment NOx Emissions

Table 8.1A.n: Onsite Power Plant Construction Equipment SO_x Emissions

Table 8.1A.o: Onsite Power Plant Construction Equipment PM₁₀ Emissions

Table 8.1A.2p: Onsite Power Plant Construction Motor Vehicle CO Emissions

Table 8.1A.2q: Onsite Power Plant Construction Motor Vehicle VOC Emissions

Table 8.1A.2r: Onsite Power Plant Construction Motor Vehicle SOx Emissions

Table 8.1A.2s: Onsite Power Plant Construction Motor Vehicle NOx Emissions

Table 8.1A.2t: Onsite Power Plant Construction Motor Vehicle PM₁₀ Emissions

Table 8.1A.3a: Onsite Demolition and Power Plant Construction Fugitive PM₁₀ Monthly Activity Levels

Source	Monthly Activity Levels													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Demolition (yd ³)	3000	3000	2000	2000	1000									
														Demolition occurs during months 1 through 5.
Bulldozing (hr)	16	8	0	16	16	8	8	0	0	0	0	0	0	0
Backhoe/Loader on Unpaved Areas (mile)	176	88	88	264	176	176	176	88	88	88	88	88	0	0
Storage Pile Wind Erosion (acres)	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0	0	0

Table 8.1A.3b: Onsite Demolition and Power Plant Construction Fugitive PM₁₀ Emissions

Source	Fugitive PM ₁₀ Emissions (lb/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Demolition	34.02	34.02	22.68	22.68	11.34									
														Demolition occurs during months 1 through 5.
Bulldozing	5.27	2.63	0.00	5.27	5.27	2.63	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe/Loader on Unpaved Areas ^a	118.33	59.16	59.16	177.49	118.33	118.33	118.33	59.16	59.16	59.16	59.16	59.16	0.00	0.00
Storage Pile Wind Erosion ^b	18.27	18.27	18.27	18.27	18.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (lbs/month)	175.89	114.09	100.11	223.71	153.21	120.96	120.96	59.16	59.16	59.16	59.16	59.16	0	0
Total (lbs/day)	7.77	4.96	4.33	9.95	6.74	5.50	5.50	2.69	2.69	2.69	2.69	2.69	0	0
Total (lbs/hr)	0.97	0.62	0.54	1.24	0.84	0.69	0.69	0.34	0.34	0.34	0.34	0.34	0	0

^a Calculation based on highest (controlled) unpaved road emission factor of 0.67 lb/mile.^b Based on 30 days/month**Table 8.1A.3c: Onsite Demolition Motor Vehicle Activity^a**

Vehicle Type	Miles Traveled per Hour	Miles/Day	Working Days per Month
Onsite Pickup Truck	2.0	11	22
Onsite Dump Truck	1.3	5	22
Onsite Water Truck	2.0	10	22
Semi Tractor	1.3	5	22

^aSee Onsite Vehicle Activity Assumption table for travel distances used to estimate maximum hourly and daily miles traveled.

Table 8.1A.3d: Onsite Demolition Motor Vehicle Fugitive PM₁₀ Emissions

Vehicle Type	Maximum Hourly Fugitive PM ₁₀ Emissions (lb/hr) for Each Month														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Onsite Pickup Truck	2.69	2.69	2.63	2.50	2.40	Demolition occurs during months 1 through 5.									
Onsite Dump Truck	2.69	2.69	1.75	0.83	0.80										
Onsite Water Truck	1.35	1.35	1.32	1.25	1.20										
Semi Tractor	0.90	0.90	0.88	0.00	0.00										
Total (lbs/hr)	7.64	7.64	6.58	4.59	4.40										
Vehicle Type	Daily Fugitive PM ₁₀ Emissions (lb/day) for Each Month														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Onsite Pickup Truck	14.37	14.37	14.04	13.34	12.79	Demolition occurs during months 1 through 5.									
Onsite Dump Truck	10.78	10.78	7.02	3.34	3.20										
Onsite Water Truck	6.74	6.74	6.59	6.26	6.00										
Semi Tractor	3.59	3.59	3.51	0.00	0.00										
Total (lbs/day)	35.49	35.49	31.15	22.93	21.98										
Vehicle Type	Monthly Fugitive PM ₁₀ Emissions (lb/month)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Onsite Pickup Truck	316.18	316.18	308.84	293.48	281.29	Demolition occurs during months 1 through 5.									
Onsite Dump Truck	237.13	237.13	154.42	73.37	70.32										
Onsite Water Truck	148.32	148.32	144.88	137.68	131.96										
Semi Tractor	79.04	79.04	77.21	0.00	0.00										
Total (lb/month)	780.68	780.68	685.35	504.53	483.57										
Total (ton/yr)	1.62														

Table 8.1A.3e: Onsite Power Plant Construction Motor Vehicle Activity^a

Vehicle Type	Maximum Miles Traveled per Hour	Miles/Day	Working Days per Month
Onsite Pickup Truck	1.4	7	22
Onsite Dump Truck	0.9	4	22
Onsite Water Truck	2.0	12	22
Semi Tractor	0.9	4	22

^aSee Onsite Vehicle Activity Assumption table for travel distances used to estimate maximum hourly and daily miles traveled.

Table 8.1A.3f: Onsite Power Plant Construction Vehicle Fugitive PM₁₀ Emissions

Table 8.1A.3g: Fugitive PM₁₀ Emission Factors for Unpaved Roads

Motor Vehicles and Equipment on Unpaved Surfaces														
Emission Factor [lb/mi] = 1.5 x (silt content [%] / 12) ^{0.9} x (average vehicle weight [tons] / 3) ^{0.45}														
Reference: AP-42, Section 13.2.2, December 2003														
Parameter		Value by Month												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Average Vehicle Weight (tons) by month	12.64	12.64	12.00	10.71	9.75	9.75	11.10	11.10	8.40	8.40	7.50	6.38	0	0
Silt Content	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Emission Factor (Uncontrolled, lb/mile)	2.10	2.10	2.05	1.95	1.87	1.87	1.98	1.98	1.75	1.75	1.66	1.54	0	0
Reduction from Watering Twice/Day	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%
Controlled Emission Factor (lb/mile)	0.67	0.67	0.66	0.62	0.60	0.60	0.63	0.63	0.56	0.56	0.53	0.49	0	0

Table 8.1A.3h: Fugitive PM₁₀ Emission Factors for Demolition, Bulldozing, and Storage Pile Wind Erosion**Demolition**Emission Factor [lb/ft³] = 0.00042

Emissions [lb/day] = 0.00042*J

Reference: SCAQMD CEQA Handbook, Table A9-9-H, November 1993

Parameter	Value	Basis
J	See above	Daily building volume demolished

Emission Factor (Uncontrolled) 0.00042 lb/ft³**Bulldozing**Emission Factor [lb/hr] = 0.75 x (silt content [%])^{1.5} / (moisture(%))^{1.4}

Reference: AP-42, Table 11.9-1, October 1998

Parameter	Value	Basis
Silt Content	8.50	AP-42, Section 13.2.2, Table 13.2.2-1
Moisture	7.90	AP-42, Section 11.9, Table 11.9-3

Emission Factor (Uncontrolled) 1.03 lb/hr

Reduction from Watering Twice/Day 68% Reference: SCAQMD CEQA Handbook, Table 11-4

Controlled Emission Factor 0.33 lb/hr

Storage Pile Wind Erosion

Emission Factor [lb/day-acre] = 1.7 x (silt content [%] / 1.5) x (365 - p / 235) x (% of time unobstructed wind exceeds 12 mph / 15)

Reference: SCAQMD CEQA Air Quality Handbook, November 1993. Table A9-9-E.

Parameter	Value	Basis
Silt Content	8.5	AP-42, Section 13.2.2, Table 13.2.2-1
		Based on met data for 1981 used for modeling, SCAQMD website http://www.aqmd.gov/smog/metdata/MeteorologicalData
Pct. time wind > 12 mph	1.7	
p (# of days of precipitation)	34	SCAQMD 1993 CEQA Air Quality Handbook

Emission Factor (Uncontrolled) 1.54 lb/day-acre

Reduction from Watering Twice/Day 68% Reference: SCAQMD CEQA Handbook, Table 11-4

Controlled Emission Factor 1.22 lb/day-acre

Table 8.1A.4a: Equations Used to Calculate Emissions

Emission Source	Pollutant(s)	Equation	Variables
Construction Equipment Exhaust	CO, VOC, NOx, SOx, and PM ₁₀	$E_m = N * EF * H * 22$	E_m = Emissions (lb/month) N = number of pieces of equipment EF = emission factor (lb/hr) H = daily hours of operation, assumed to be 8 hr/day 22 = 22 construction days per month
		$E_d = E_m / 22$	E_d = Emissions (lb/day) E_m = Emissions (lb/month) 22 = 22 construction days per month
		$E_h = E_d / 8$	E_h = Emissions (lb/hr) E_d = Emissions (lb/day) 8 = 8 hours per work day
		$E_t = \sum E_m / 2000$	E_t = Emissions (ton/yr) E_m = Emissions (lb/month) 2000 = conversion from lbs to tons
Onsite Motor Vehicle Exhaust and Unpaved Road Fugitive PM ₁₀	CO, VOC, NOx, SOx, PM ₁₀	$E_h = N * M * EF$	E_h = Emissions (lb/hr) N = number of vehicles M = maximum miles traveled in one hour (miles/hour) EF = EMFAC2002 emission factor (lb/mile). For fugitive PM ₁₀ , Unpaved road dust emission factor based on equation in AP-42, ch. 13.2.2, December 2003 (lb/mile)
		$E_d = N * VMT * EF$	E_d = Emissions (lb/day) N = number of vehicles VMT = vehicle miles traveled per day (miles/day) EF = EMFAC2002 emission factor (lb/mile). For fugitive PM ₁₀ , Unpaved road dust emission factor based on equation in AP-42, ch. 13.2.2, December 2003 (lb/mile)
		$E_m = E_d * D$	E_m = Emissions (lb/month) E_d = Emissions (lb/day) D = number of construction days (days/month)
Offsite Motor Vehicle Exhaust	CO, VOC, NOx, SOx, and PM ₁₀	$E_m = N * TL * EF * 22$	E_m = Emissions (lb/month) N = number of vehicles TL = trip length (miles/day) EF = emission factor (lb/mile) 22 = 22 construction days per month
		$E_d = E_m / 22$	E_d = Emissions (lb/day) E_m = Emissions (lb/month) 22 = 22 construction days per month
		$E_h = E_d / 8$	E_h = Emissions (lb/hr) E_d = Emissions (lb/day) 8 = 8 hours per work day
Offsite Motor Vehicle Paved Road Fugitive PM ₁₀	PM ₁₀	$E_m = N * TL * EF * 22$	E_m = Emissions (lb/month) N = number of vehicles TL = trip length (miles/day) EF = emission factor (lb/mile) from AP-42, ch. 13.2.1, fugitive dust from paved roads 22 = 22 construction days per month
		$E_d = E_m / 22$	E_d = Emissions (lb/day) E_m = Emissions (lb/month) 22 = 22 construction days per month
		$E_h = E_d / 8$	E_h = Emissions (lb/hr) E_d = Emissions (lb/day) 8 = 8 hours per work day

Note: Tables 8.1A.3g and 8.1A.3h contain the equations used to calculate fugitive dust emissions.

Reference: SCAQMD CEQA Handbook online, <http://www.aqmd.gov/ceqa/handbook/offroad/offroad.html> for construction equipment exhaust emissions and <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html> for vehicle exhaust.

Table 8.1A.4b: Number of Onsite Demolition Equipment

Onsite Equipment	Number of Equipment (N)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bulldozer	2	1	0	0	0									
Excavator	2	2	0	0	0									
Grader	0	0	1	1	1									
Backhoe/Front End Loader	2	1	1	1	0									
Rubber Tired Crane	1	1	1	0	0									

Demolition occurs during months 1 through 5.

Table 8.1A.4c: Number of Onsite Demolition Motor Vehicles

Vehicle Type	Number Used Each Month (N)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Onsite Pickup Truck	2	2	2	2	2									
Onsite Dump Truck	3	3	2	1	1									
Onsite Water Truck	1	1	1	1	1									
Semi Tractor	1	1	1	0	0									

Demolition occurs during months 1 through 5.

Table 8.1A.4d: Number of Onsite Power Plant Construction Equipment

Onsite Equipment	Number of Equipment (N)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Bulldozer				2	2	1	1	0	0	0	0	0	0	0
Excavator				2	2	2	1	1	0	0	0	0	0	0
Grader				1	1	1	1	1	0	0	0	0	0	0
Forklift				1	2	2	3	3	3	2	2	1	0	0
Generator sets				1	1	2	2	2	2	2	2	1	0	0
Light Plant				1	1	1	2	2	2	1	1	1	0	0
Backhoe/Front End Loader				2	2	2	2	1	1	1	1	1	0	0
Rubber Tired Crane				1	1	1	1	2	2	2	1	1	0	0
Cherry Picker Hydraulic Crane				0	0	1	1	1	2	2	2	1	0	0
300 Ton Cranes				0	0	0	1	1	1	1	0	0	0	0
Concrete Vibrator ^a				1	3	4	4	4	3	2	2	0	0	0
Paving Equipment				0	0	0	0	0	0	0	0	1	0	0
Roller/Compactor				1	1	1	1	1	0	0	0	1	0	0
Welding Machine				0	1	1	1	1	2	2	1	1	0	0
Pipe Grinder				0	4	9	14	14	14	15	12	6	0	0
JLG Lift (Scissor Lift)				0	0	0	1	1	1	2	2	1	0	0

^a Assumes 2 concrete vibrators use one generator.**Table 8.1A.4e: Number of Onsite Power Plant Construction Motor Vehicles**

Vehicle Type	Number Used Each Month (N)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Onsite Pickup Truck				1	2	2	2	2	3	3	4	3	0	0
Onsite Dump Truck				1	1	1	1	1	0	0	0	0	0	0
Onsite Water Truck				1	1	1	1	1	1	1	1	1	0	0
Semi Tractor				0	0	0	1	1	1	1	1	1	0	0

Power Plant Construction occurs during months 4 through 14.

Table 8.1A.4f: Demolition and Power Plant Construction Equipment Emission Factors

	Fuel Type	Emission Factors, EF (lb/hr) ^a				
		CO	VOC	NO _x	SO _x ^b	PM ₁₀
Bulldozer	diesel	1.024	0.211	2.817	0.014	0.112
Excavator	diesel	0.472	0.097	1.138	0.0073	0.06
Grader	diesel	0.546	0.124	1.442	0.0083	0.074
Forklift	diesel	0.259	0.079	0.457	0	0.05
Generator sets	diesel	0.322	0.094	0.656	0.00003	0.048
Light Plant ^c	diesel	0.322	0.094	0.656	0.00003	0.048
Backhoe/Front End Loader	diesel	0.419	0.125	0.816	0.0035	0.083
Rubber Tired Crane	diesel	0.355	0.086	1.023	0.0059	0.052
Cherry Picker Hydraulic Crane	diesel	0.355	0.086	1.023	0.0059	0.052
300 Ton Crane	diesel	0.355	0.086	1.023	0.0059	0.052
Concrete Vibrator ^d	diesel	0.16	0.03	0.27	0	0.01
Paving Equipment	diesel	0.411	0.107	0.909	0.0043	0.066
Roller/Compactor	diesel	0.364	0.077	0.697	0.0042	0.051
Welding Machine	electric	0	0	0	0	0
Pipe Grinder	electric	0	0	0	0	0
JLG Lift (Scissor Lift)	diesel	0.259	0.079	0.457	0	0.05

^a Offroad mobile source emission factors from SCAQMD website (<http://www.aqmd.gov/ceqa/handbook/offroad/offroad.html>). To be conservative, the emission factors for the year 2007 were used for the construction equipment exhaust emission calculations although some construction activities may occur after 2007.

^b According to SCAQMD Rule 431.2 (c)(3), on or after January 1, 2005, the sulfur content of diesel fuel supplied for mobile sources shall not exceed 15 ppm by weight. Therefore, the SO_x emission factors were reduced by 97% to account for the change in diesel fuel sulfur content from 500 ppm to 15 ppm.

^c Assumed the emission factors for the light plant were the same as the generator.

^d Assumes emission factor for generator <50hp from SCAQMD CEQA Hanbook, Table A9-8-B, using 20 hp and 74% load.

Table 8.1A.4g: Motor Vehicle Emission Factors^a

Vehicle Type	Vehicle Class	Mean Vehicle Weight (tons) ^b	Silt loading (g/m ²) ^c	CO	VOC	SO _X	NO _X	PM ₁₀	
				Exhaust lb/mi	Exhaust lb/mi	Exhaust lb/mile	Exhaust lb/mi	Exhaust lb/mi	Road Dust ^d lb/mi
Onsite Pickup Truck	Passenger Vehicle (<8500 lbs), gasoline	3	0.6	0.0128	0.0014	0.000009	0.0014	0.00008	N/A
Onsite Dump /Water Truck / Semi Tractor	Heavy heavy-duty truck, diesel	16.5	0.6	0.0055	0.0012	0.000046	0.0356	0.00064	N/A
Offsite Construction Commuter	Passenger Vehicle (<8500 lbs), gasoline	3	0.6	0.0128	0.0014	0.000009	0.0014	0.00008	0.0043
Offsite Miscellaneous Noncommute	Passenger Vehicle (<8500 lbs), gasoline	3	0.6	0.0128	0.0014	0.000009	0.0014	0.00008	0.0043
Offsite Delivery/Haul Truck	Heavy heavy-duty truck, diesel	16.5	0.6	0.0055	0.0012	0.000046	0.0356	0.00064	0.06

All emission factors, except paved road dust, are from the SCAQMD EMFAC2002 V 2.2 summary table

(<http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>), for calendar year 2007. The emission factors account for emissions from start, running, and idling exhaust. In addition, the ROG emission factors take into account diurnal, hot soak, running and resting emissions, and PM10 emission factor takes into account the tire and brake wear.

^b Weighted average assumes that autos/trucks weigh 3 tons and heavy duty trucks weigh 16.5 tons.

^c Silt loading from AP-42, Ch. 13, Table 13.2.1-3, for average daily traffic <500.

^d Paved Road Dust emission factor [lb/mi] = 0.016 (Silt Loading/2)^{0.65} (Fleet Average Vehicle Weight/3)^{1.5} - 0.00047 * (1 - # days precipitation/365 day/yr *4), from AP-42, ch 13.2.1. The number of days of precipitation (34 days) taken from the SCAQMD CEQA Handbook (November, 1993) Table A9-9-D-4.

^e Onsite Dump Trucks/Semi Tractors/Pickup Trucks/Water Trucks were assumed to travel only on unpaved roads.

Table 8.1A.4h: Onsite Demolition Vehicle Activity Assumptions

Truck Type	Distance Traveled (miles) per One-way Trip	Maximum Roundtrips per Hour	Average Roundtrips per Hour	Assumptions					Notes	References
				Maximum Miles Traveled in One Hour	Average Miles Traveled per Hour	Working Hours per Day	Miles per Day	Working Days per Month		
Onsite Pickup Truck	0.2	6	4	2.0	1.3	8	11	22	- Assumes length traveled is ~270 meters long (or ~540 meters roundtrip)	Dimensions from area used for modeling demolition
Onsite Dump Truck	0.2	4	2	1.3	0.7	8	5	22	- Assumes length traveled is ~270 meters long (or ~540 meters roundtrip)	Dimensions from area used for modeling demolition
Semi Tractor	0.2	4	2	1.3	0.7	8	5	22	- Assumes length traveled is ~270 meters long (or ~540 meters roundtrip)	Dimensions from area used for modeling demolition
Onsite Water Truck	Width of Area (m)	Length of Area (m)	Width of Sprayer (m)	Fraction of Area (5.7 acres) Watered per Hour	Maximum Miles Traveled in One Hour	Working Hours per Day	Miles per Day	Working Days per Month		
	86	270	3.66	0.51	2.01	5	10	22	- Assumes water truck covers 2.9 acres/hour over the 5.7 acre site - Assumes 4,000 gallon water truck with water spray width of ~12 feet (~3.66m) - Assumes in two hours entire site is watered and this is done twice per day, for a total of 4 hours of watering and 1 hour for refilling water tank	Final BACM Technological and Economic Feasibility Analysis, SJVUAPCD, March 21, 2003 Width estimated from photos on http://www.dfequipment.com/Water%20Trucks.htm Dimensions from area used for modeling demolition

Table 8.1A.4i: Onsite Power Plant Construction Vehicle Activity Assumptions

Truck Type	Distance Traveled (miles) per One-way Trip	Maximum Roundtrips per Hour	Average Roundtrips per Hour	Assumptions					Notes	References
				Maximum Miles Traveled in One Hour	Average Miles Traveled per Hour	Working Hours per Day	Miles per Day	Working Days per Month		
Onsite Pickup Truck	0.1	6	4	1.4	0.9	8	7	22	- Assumes length traveled is ~180 meters long (or ~360 meters roundtrip)	Dimensions from area used for modeling construction
Onsite Dump Truck	0.1	4	2	0.9	0.5	8	4	22	- Assumes length traveled is ~180 meters long (or ~360 meters roundtrip)	Dimensions from area used for modeling construction
Semi Tractor	0.1	4	2	0.9	0.5	8	4	22	- Assumes length traveled is ~180 meters long (or ~360 meters roundtrip)	Dimensions from area used for modeling construction
Onsite Water Truck	Width of Area (m)	Length of Area (m)	Width of Sprayer (m)	Fraction of Area (7 acres) Watered per Hour	Maximum Miles Traveled in One Hour	Working Hours per Day	Miles per Day	Working Days per Month	Notes	
	155	180	3.66	0.4	2.0	6	12	22	- Assumes water truck covers 2.9 acres/hour over the 7 acre site - Assumes 4,000 gallon water truck with water spray width of ~12 feet (~3.66m) - Assumes in 2.5 hours entire site is watered and this is done twice per day, for a total of 5 hours of watering and 1 hour for refilling water tank	Final BACM Technological and Economic Feasibility Analysis, SJVUAPCD, March 21, 2003 Width estimated from photos on http://www.dfequipment.com/Water%20Trucks.htm Dimensions from area used for modeling construction

Table 8.1A.5a: Offsite Motor Vehicle Usage during Demolition

Vehicle Type	Number of Vehicles (N)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Offsite Construction Commuter	15	15	15	15	15									
Offsite Miscellaneous Noncommute	1	1	1	1	1									
Offsite Delivery/Haul Truck	1	1	1	1	1									

Demolition occurs during months 1 through 5.

Table 8.1A.5b: Offsite Motor Vehicle CO Emissions (Demolition)

Vehicle Type	CO Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Offsite Construction Commuter	169.22	169.22	169.22	169.22	169.22									
Offsite Miscellaneous Noncommute	2.82	2.82	2.82	2.82	2.82									
Offsite Delivery/Haul Truck	4.86	4.86	4.86	4.86	4.86									
Total (lbs/month)	176.90	176.90	176.90	176.90	176.90									
Total (lbs/day)	8.04	8.04	8.04	8.04	8.04									
Total (ton/yr)	0.44													

Table 8.1A.5c: Offsite Motor Vehicle VOC Emissions (Demolition)

Vehicle Type	VOC Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Offsite Construction Commuter	18.26	18.26	18.26	18.26	18.26									
Offsite Miscellaneous Noncommute	0.304	0.304	0.304	0.304	0.304									
Offsite Delivery/Haul Truck	1.08	1.08	1.08	1.08	1.08									
Total (lbs/month)	19.64	19.64	19.64	19.64	19.64									
Total (lbs/day)	0.89	0.89	0.89	0.89	0.89									
Total (ton/yr)	0.049													

Demolition occurs during months 1 through 5.

Table 8.1A.5d: Offsite Motor Vehicle SOx Emissions (Demolition)

Vehicle Type	SO _x Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Offsite Construction Commuter	0.12	0.12	0.12	0.12	0.12									
Offsite Miscellaneous Noncommute	0.00198	0.00198	0.00198	0.00198	0.00198									
Offsite Delivery/Haul Truck	0.0402	0.0402	0.0402	0.0402	0.0402									
Total (lbs/month)	0.16	0.16	0.16	0.16	0.16									
Total (lbs/day)	0.0073	0.0073	0.0073	0.0073	0.0073									
Total (ton/yr)	0.000403													

Demolition occurs during months 1 through 5.

Table 8.1A.5e: Offsite Motor Vehicle NO_x Emissions (Demolition)

Vehicle Type	NO _x Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Offsite Construction Commuter	17.97	17.97	17.97	17.97	17.97									
Offsite Miscellaneous Noncommute	0.299	0.299	0.299	0.299	0.299									
Offsite Delivery/Haul Truck	31.36	31.36	31.36	31.36	31.36									
Total (lbs/month)	49.62	49.62	49.62	49.62	49.62									
Total (lbs/day)	2.26	2.26	2.26	2.26	2.26									
Total (ton/yr)	0.12													

Table 8.1A.5f: Offsite Motor Vehicle PM₁₀ Emissions (Demolition)

Vehicle Type	PM ₁₀ Emissions (lbs/month)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Offsite Construction Commuter	57.75	57.75	57.75	57.75	57.75									
Offsite Miscellaneous Noncommute	0.96	0.96	0.96	0.96	0.96									
Offsite Delivery/Haul Truck	52.40	52.40	52.40	52.40	52.40									
Total (lbs/month)	111.12	111.12	111.12	111.12	111.12									
Total (lbs/day)	5.05	5.05	5.05	5.05	5.05									
Total (ton/yr)	0.28													

Table 8.1A.5g: Offsite Motor Vehicle Emission Factors

Vehicle Type	Miles/Day	CO (lb/mile)	VOC (lb/mile)	SO _x (lb/mile)	NO _x (lb/mile)	PM ₁₀ (lb/mile)
Offsite Construction Commuter	40	0.013	0.0014	0.000009	0.0014	0.0044
Offsite Miscellaneous Noncommute	10	0.013	0.0014	0.000009	0.0014	0.0044
Offsite Delivery/Haul Truck	40	0.006	0.0012	0.000046	0.036	0.060

Table 8.1A.5h: Offsite Motor Vehicle Usage during Power Plant Construction

Vehicle Type	Number of Vehicles (N)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Offsite Construction Commuter	26	36	55	75	79	79	79	79	79	66	44	25		
Offsite Miscellaneous Noncommute	Power Plant Construction occurs during months 4 through 14.	5	5	5	5	5	5	5	5	5	5	0	0	
Offsite Delivery/Haul Truck		10	4	2	2	2	2	2	2	2	2	0	0	

Table 8.1A.5i: Offsite Motor Vehicle CO Emissions (Power Plant Construction)

Table 8.1A.5j: Offsite Motor Vehicle VOC Emissions (Power Plant Construction)

Table 8.1A.5k: Offsite Motor Vehicle SOx Emissions (Power Plant Construction)

Table 8.1A.5I: Offsite Motor Vehicle NOx Emissions (Power Plant Construction)

Table 8.1A.5m: Offsite Motor Vehicle PM₁₀ Emissions (Power Plant Construction)

Table 8.1A.5n: Offsite Natural Gas Pipeline Construction Equipment Requirements

Equipment	Peak Number
Compressor, 250 cfm	1
Tractor/Loader/Backhoe, 1/2 CY	1
Crane, 5 ton	1
Welder	1
Vibratory Compactor	1
Roller, 5 ton	1
Paver	1
Number of acres paved*	2.5
Duration (months)	6

*Estimated based on approximately 7 mile long 3 foot wide trench.

Table 8.1A.5o: Offsite Natural Gas Pipeline Construction Equipment Emission Factors

Equipment	CO (lbs/hr)	VOC (lbs/hr)	NO _x (lbs/hr)	SO _x (lbs/hr)	PM ₁₀ (lbs/hr)
Compressor, 250 cfm	0.23	0.079	0.32	0	0.034
Tractor/Loader/Backhoe, 1/2 CY	0.42	0.13	0.82	0.0035	0.083
Crane, 5 ton	0.36	0.086	1.02	0.0059	0.052
Welder	0.23	0.079	0.32	0	0.034
Vibratory Compactor	0.03	0.009	0.039	0	0.002
Roller, 5 ton	0.36	0.077	0.697	0.0042	0.051
Paver	0.44	0.098	0.802	0.0050	0.058

Table 8.1A.5p: Offsite Emissions from Natural Gas Pipeline Construction

Construction Activity	CO (lbs/day)	VOC (lbs/day)	NO _x (lbs/day)	SO _x (lbs/day)	PM ₁₀ (lbs/day)
Compressor, 250 cfm	1.86	0.63	2.54	0	0.27
Tractor/Loader/Backhoe, 1/2 CY	3.35	1.00	6.53	0.028	0.66
Crane, 5 ton	2.84	0.69	8.18	0.047	0.42
Welder	1.86	0.63	2.54	0	0.27
Vibratory Compactor	0.21	0.072	0.31	0	0.016
Roller, 5 ton	2.91	0.62	5.58	0.033	0.41
Paver	3.48	0.78	6.42	0.040	0.46
Maximum Construction Equipment (lbs/day)^a	16.50	4.42	32.10	0.15	2.51
Maximum Motor Vehicles (lbs/day)^b	9.02	1.12	9.37	0.016	16.92
Combined Maximum (lbs/day)^c	25.52	12.10	41.47	0.16	19.43
Total Offsite Construction (tons)^d	1.68	0.44	2.74	0.011	1.28

^a Assumes construction equipment operates 8 hours per day.

^b Represents the maximum combined (commute plus delivery truck) vehicle emissions.

^c Combined total included VOC emissions from paving.

^d Conservatively assumes that peak construction occurs 22 days/month during the six month construction period, except for paving which was assumed to occur for 1 month.

Table 8.1A.5q: Offsite VOC Emissions from Paving during Natural Gas Pipeline Construction

Emission Factor	2.62	lb ROG/acre
VOC Emissions (lb/day)	6.55	

Reference: URBEMIS2002 version 8.7.

Table 8.1A.5r: Offsite Motor Vehicle Usage During Natural Gas Pipeline Construction

Construction Activity	Number per Day		Vehicle Miles		Construction Commuter Emissions (lbs/day)					Delivery/Haul Truck Emissions (lbs/day)				
	Construction Commuter	Delivery/Haul Truck	Construction Commuter	Delivery/Haul Truck	CO	VOC	SOx	NOx	PM ₁₀	CO	VOC	SOx	NOx	PM ₁₀
			Miles/Day	Miles/Day										
Pavement Removal	6	5	40	40	3.08	0.33	0.0022	0.33	1.05	1.10	0.25	0.0091	7.13	11.91
Trenching	2	3	40	40	1.03	0.11	0.0007	0.11	0.35	0.66	0.15	0.0055	4.28	7.15
Pipe Installation	15	2	40	40	7.69	0.83	0.0054	0.82	2.62	0.44	0.10	0.0037	2.85	4.76
Backfilling	2	6	40	40	1.03	0.11	0.0007	0.11	0.35	1.32	0.29	0.0110	8.55	14.29
Compaction	4	6	40	40	2.05	0.22	0.0014	0.22	0.70	1.32	0.29	0.0110	8.55	14.29
Repaving	6	5	40	40	3.08	0.33	0.0022	0.33	1.05	1.10	0.25	0.0091	7.13	11.91

Table 8.1A.5s: Offsite Potable Water Line Construction Equipment Requirements

Equipment	Peak Number
Compressor, 250 cfm	1
Tractor/Loader/Backhoe, 1/2 CY	1
Dump Truck	1
Grinder	1
Vibratory Compactor	1
Jackhammer	1
Duration (months)	4

Table 8.1A.5t: Offsite Potable Water Line Construction Equipment Emission Factors

Equipment	CO (lbs/hr)	VOC (lbs/hr)	NO _x (lbs/hr)	SO _x (lbs/hr)	PM ₁₀ (lbs/hr)
Compressor, 250 cfm	0.23	0.08	0.32	0.00	0.03
Tractor/Loader/Backhoe, 1/2 CY	0.42	0.13	0.82	0.0035	0.08
Grinder	0.23	0.08	0.32	0.00	0.03
Vibratory Compactor	0.026	0.009	0.039	0.000	0.002
Jackhammer	0	0	0	0	0
Maximum Hourly (lbs/hour)	0.91	0.29	1.49	0.003	0.15

Offroad mobile source emission factors from URBEMIS2002 version 8.7 for the year 2007.

Table 8.1A.5u: Offsite Emissions from Potable Water Line Construction

Equipment	CO (lbs/day)	VOC (lbs/day)	NO _x (lbs/day)	SO _x (lbs/day)	PM ₁₀ (lbs/day)
Compressor, 250 cfm	1.86	0.63	2.54	0	0.27
Tractor/Loader/Backhoe, 1/2 CY	3.35	1.00	6.53	0.028	0.66
Grinder	1.86	0.63	2.54	0.000	0.27
Vibratory Compactor	0.21	0.07	0.31	0	0
Jackhammer	0	0	0	0	0
Total Construction Equipment (lbs/day)^a	7.27	2.34	11.93	0.03	1.22
Total Motor Vehicles (lbs/day)^b	5.86	0.66	2.02	0.006	4.31
Combined Total (lbs/day)	13.13	2.99	13.95	0.03	5.53
Combined Total (tons)^c	0.58	0.13	0.61	0.001	0.24

^a Assumes construction equipment operates 8 hours per day.

^b Represents the maximum combined (commute plus delivery truck) vehicle emissions.

^c Conservatively assumes that peak construction occurs 22 days/month during the eight month construction period.

Table 8.1A.5v: Offsite Motor Vehicle Usage During Potable Water Line Construction

Construction Activity	Number per Day		Construction Commuter Emissions (lbs/day)					Delivery/Haul Truck Emissions (lbs/day)						
	Construction Commuter ^a	Delivery/ Haul Truck	Construction Commuter	Delivery/ Haul Truck	CO	VOC	SOx	NOx	PM ₁₀	CO	VOC	SOx	NOx	PM ₁₀
			Miles /Day	Miles /Day										
Pavement Removal	11	0	40	40	5.64	0.61	0.0040	0.60	1.92	0	0	0	0	0
Trenching	11	0	40	40	5.64	0.61	0.0040	0.60	1.92	0	0	0	0	0
Pipe Installation	11	0	40	40	5.64	0.61	0.0040	0.60	1.92	0	0	0	0	0
Backfilling	11	1	40	40	5.64	0.61	0.0040	0.60	1.92	0.22	0.049	0.0018	1.43	2.38
Compaction	11	1	40	40	5.64	0.61	0.0040	0.60	1.92	0.22	0.049	0.0018	1.43	2.38
Repaving	11	1	40	40	5.64	0.61	0.0040	0.60	1.92	0.22	0.049	0.0018	1.43	2.38

^a Conservatively assumes maximum number of commuters for each construction activity.

Table 8.1A.6. Summary of Emission Rates Used for Dispersion Modeling

Modeling Scenarios ^a	Maximum Pollutant Emissions					
	CO	NOx	SOx	PM ₁₀ Exhaust	PM ₁₀ Fugitive	PM ₁₀ Stockpile ^b
Scenario 1: Demolition (Months 1-3)^c						
Maximum 1-hour Emission Rate (lb/hr)	4.28	10.83	0.055	NA	NA	NA
Daily 1-hour Emission Rate (lb/hr)	4.24	NA	0.055	0.56	5.33	0.025
Annual Emission Rate (tons/yr)	NA	2.20	0.011	0.12	1.77	0.05
Scenario 2: Power Plant Construction (Months 6-14)^d						
Maximum 1-hour Emission Rate (lb/hr)	7.34	16.45	0.071	NA	NA	NA
Daily 1-hour Emission Rate (lb/hr)	7.32	NA	0.071	1.07	3.35	0
Annual Emission Rate (tons/yr)	NA	9.89	0.042	0.64	2.31	0
Scenario 3: Overlap (Months 4 and 5 when demolition and construction overlap)^e						
Demolition Maximum 1-hour Emission Rate (lb/hr)	0.62	1.57	0.0085	NA	NA	NA
Construction Maximum 1-hour Emission Rate (lb/hr)	6.80	15.84	0.076	NA	NA	NA
Demolition Daily 1-hour Emission Rate (lb/hr)	0.59	NA	0.0084	0.16	3.33	0.025
Construction Daily 1-hour Emission Rate (lb/hr)	6.78	NA	0.076	0.85	2.47	0

NA = Time period not used for dispersion modeling of pollutant.

Notes:

^a The maximum 1-hour emission rates were used to model the 1-hour and 3-hour concentrations. The daily 1-hour emission rates were used to model the 8-hour and 24-hour concentrations, assuming 8 hours per work day. The annual emission rates were used to model the annual concentrations.

^b Stockpile fugitive emissions were only included with demolition because stockpiling would occur during months 1-5.

^c For demolition, maximum emissions occur in month 1 for all pollutants.

^d For power plant construction, maximum emissions occur in month 7 except for SOx where the maximum occurs in month 6.

^e For the overlap of demolition and power plant construction, the maximum 1-hour emissions occur in month 5 for CO, NOx, and SOx. The maximum daily emissions occur in month 5 for CO, NOx, and SOx. The maximum daily PM₁₀ exhaust and PM₁₀ Fugitive emissions occur in month 4.

TABLE 8.1A.7: ISC Construction Model Input Summary

Annual Demolition and Construction Impacts - Months 1 - 12									Emission Rate (tpy)			
Source ID	Description	UTM Easting (m)	UTM Northing (m)	elev (m)	release height (m)	x length (m)	y length (m)	degree rotation	CO (tpy)	NOx (tpy)	SOx (tpy)	PM_10 (tpy)
C_DUST	Construction Wind Blown Dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	0
C_FUG	Construction Equipment Fug dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	2.313
C_EXHT	Construction Equipment Exhaust	469347.44	3764545.5	286.2	4.7	155	183	0.75	0	9.888	0.04207	0.645
D_DUST	Demolition Wind Blown Dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	0.046
D_FUG	Demolition Equipment Fug dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	1.768
D_EXHT	Demolition Equipment Exhaust	469410.78	3764267.25	286.2	4.7	86	269	0.75	0	2.202	0.01147	0.121
Demolition and Construction Overlap Impacts - Months 4 - 5									Emission Rate (lb/hr)			
Source ID	Description	UTM Easting (m)	UTM Northing (m)	elev (m)	release height (m)	x length (m)	y length (m)	degree rotation	CO	NOx	SOx	PM_10
Short Term - 1 and 3 Hour Impact												
C_DUST	Construction Wind Blown Dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	0
C_FUG	Construction Equipment Fug dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	0
C_EXHT	Construction Equipment Exhaust	469347.44	3764545.5	286.2	4.7	155	183	0.75	6.796	15.836	0.07603	0
D_DUST	Demolition Wind Blown Dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	0
D_FUG	Demolition Equipment Fug dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	0
D_EXHT	Demolition Equipment Exhaust	469410.78	3764267.25	286.2	4.7	86	269	0.75	0.616	1.566	0.00847	0
Short Term - 8 and 24 Hour Impact												
C_DUST	Construction Wind Blown Dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	0
C_FUG	Construction Equipment Fug dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	2.472
C_EXHT	Construction Equipment Exhaust	469347.44	3764545.5	286.2	4.7	155	183	0.75	6.779	0	0.07598	0.849
D_DUST	Demolition Wind Blown Dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	0.02537
D_FUG	Demolition Equipment Fug dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	3.329
D_EXHT	Demolition Equipment Exhaust	469410.78	3764267.25	286.2	4.7	86	269	0.75	0.591	0	0.00839	0.158
Demolition Impacts Only - Months 1 - 3									Emission Rate (lb/hr)			
Source ID	Description	UTM Easting (m)	UTM Northing (m)	elev (m)	release height (m)	x length (m)	y length (m)	degree rotation	CO	NOx	SOx	PM_10
Short Term - 1 and 3 Hour Impact												
D_DUST	Demolition Wind Blown Dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	0
D_FUG	Demolition Equipment Fug dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	0
D_EXHT	Demolition Equipment Exhaust	469410.78	3764267.25	286.2	4.7	86	269	0.75	4.277	10.832	0.05485	0
Short Term - 8 and 24 Hour Impact												
D_DUST	Demolition Wind Blown Dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	0.02537
D_FUG	Demolition Equipment Fug dust	469410.78	3764267.25	286.2	2	86	269	0.75	0	0	0	5.328
D_EXHT	Demolition Equipment Exhaust	469410.78	3764267.25	286.2	4.7	86	269	0.75	4.241	0	0.05468	0.565
Construction Impacts Only - Months 6 - 14									Emission Rate (lb/hr)			
Source ID	Description	UTM Easting (m)	UTM Northing (m)	elev (m)	release height (m)	x length (m)	y length (m)	degree rotation	CO	NOx	SOx	PM_10
Short Term - 1 and 3 Hour Impact												
C_DUST	Construction Wind Blown Dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	0
C_FUG	Construction Equipment Fug dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	0
C_EXHT	Construction Equipment Exhaust	469347.44	3764545.5	286.2	4.7	155	183	0.75	7.340	16.452	0.07134	0
Short Term - 8 and 24 Hour Impact												
C_DUST	Construction Wind Blown Dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	0
C_FUG	Construction Equipment Fug dust	469347.44	3764545.5	286.2	2	155	183	0.75	0	0	0	3.35076
C_EXHT	Construction Equipment Exhaust	469347.44	3764545.5	286.2	4.7	155	183	0.75	7.321	0	0.07129	1.072

TABLE 8.1A.8a
AES Construction Modeling

1-hr NOx Modeled Concentration - Demolition Impacts
Receptors distances, original NOx concentrations, adjusted NO2 concentrations

0-100 meters				101-200 meters				201-500 meters				501-1000 meters				1001-2000 meters				2001 + meters			
x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2
469491.2	3764249	1008.07	74.60	469511.1	3764649	663.16	75.60	469456.6	3764736	478.57	123.47	469450	3765040	179.11	83.64	469400	3765600	68.12	51.09	471500	3764400	28.86	28.86
469475.5	3764251	1005.88	74.44	469450	3764140	659.57	75.19	469484.3	3764735	473.71	122.22	469480	3765040	178.67	83.44	469500	3763200	68.11	51.08	469400	3766600	28.72	28.72
469450	3764230	1005.38	74.40	469480	3764140	655.00	74.67	469428.8	3764736	470.92	121.50	469510	3765040	177.33	82.81	469500	3765600	68.09	51.07	467400	3764300	28.67	28.67
469480	3764230	1002.70	74.20	469420	3764140	649.87	74.09	469450	3764740	468.76	120.94	469420	3765040	176.35	82.36	469400	3763200	67.98	50.98	467400	3764500	28.66	28.66
469420	3764230	1002.43	74.18	469510	3764140	617.12	70.35	469480	3764740	466.23	120.29	469390	3765040	176.12	82.25	469300	3765600	67.12	50.34	467400	3764400	28.63	28.63
469452.1	3764254	996.34	73.73	469390	3764140	604.42	68.90	469420	3764740	459.00	118.42	469450	3763750	173.49	81.02	469600	3765600	66.98	50.23	469300	3766600	28.61	28.61
469428.7	3764257	994.13	73.57	469511.4	3764678	581.62	66.30	469512	3764735	456.66	117.82	469480	3763750	173.48	81.01	469300	3763200	66.95	50.21	469600	3762200	28.60	28.60
469405.3	3764261	962.47	71.22	469540	3764650	580.33	66.16	469401.1	3764736	452.71	116.80	469420	3763750	173.39	80.97	469700	3765600	65.51	49.13	471500	3764200	28.56	28.56
469509.9	3764534	941.68	69.68	469450	3764110	574.12	65.45	469510	3764740	449.27	115.91	469360	3765040	173.12	80.85	469200	3763200	65.30	48.97	467400	3764200	28.56	28.56
469510.2	3764563	938.89	69.48	469480	3764110	570.35	65.02	469450	3764050	443.80	114.50	469570	3765040	172.01	80.33	469600	3763200	65.09	48.81	467400	3764600	28.55	28.55
469507	3764248	935.13	69.20	469420	3764110	565.54	64.47	469480	3764050	441.03	113.79	469510	3763750	171.92	80.28	470500	3764400	64.66	48.50	471500	3764700	28.53	28.53
469400.3	3764272	926.77	68.58	469540	3764140	542.97	61.90	469420	3764050	439.47	113.38	469390	3763750	171.82	80.24	469700	3763200	64.36	48.27	469700	3766600	28.47	28.47
469510	3764530	914.25	67.65	469510	3764110	538.16	61.35	469390	3764740	434.44	112.08	469540	3765040	171.46	80.07	469200	3765600	64.22	48.16	469600	3766600	28.45	28.45
469510	3764230	905.22	66.99	469360	3764140	526.66	60.04	469510	3764050	423.18	109.18	469330	3765040	169.06	78.95	470500	3764300	64.17	48.13	471500	3764300	28.45	28.45
469507.3	3764276	897.81	66.44	469390	3764110	526.18	59.98	469540	3764740	421.65	108.78	469540	3763750	168.68	78.77	468400	3764400	63.86	47.90	469200	3762200	28.42	28.42
469398.2	3764278	895.62	66.28	469511.7	3764706	514.11	58.61	469390	3764050	420.90	108.59	469360	3763750	168.27	78.58	470500	3764600	63.81	47.85	469200	3766600	28.37	28.37
469510	3764260	889.78	65.84	469450	3764080	503.06	57.35	469373.4	3764736	417.72	107.77	469600	3765040	167.95	78.43	468400	3764300	63.76	47.82	467400	3764100	28.35	28.35
469450	3764200	887.23	65.66	469540	3764680	501.10	57.13	469450	3764770	415.15	107.11	469450	3765070	166.72	77.86	468400	3764500	63.70	47.77	467400	3764700	28.35	28.35
469480	3764200	884.47	65.45	469480	3764080	500.10	57.01	469480	3764770	412.74	106.49	469570	3763750	166.40	77.71	470500	3764200	63.69	47.77	471500	3764800	28.31	28.31
469420	3764200	878.33	65.00	469420	3764080	497.02	56.66	469420	3764770	406.69	104.93	469480	3765070	166.18	77.61	468400	3764200	63.20	47.40	471500	3764800	28.28	28.28
469509.6	3764506	875.25	64.77	469540	3764110	489.44	55.80	469360	3764740	401.33	103.54	469330	3763750	165.78	77.42	468400	3764600	63.07	47.30	471500	3764000	28.28	28.28
469510.5	3764592	874.77	64.73	469570	3764650	483.23	55.09	469510	3764770	400.97	103.45	469510	3765070	165.12	77.11	469100	3763200	63.03	47.27	469800	3766600	28.21	28.21
469510	3764500	862.88	63.85	469360	3764110	479.43	54.65	469540	3764050	397.73	102.61	469420	3765070	164.81	76.96	469100	3765600	62.83	47.12	469300	3762200	28.16	28.16
469510	3764290	856.05	63.35	469510	3764080	478.21	54.52	469450	3764020	394.06	101.67	469390	3765070	163.74	76.47	469800	3763200	62.75	47.06	469100	3762200	28.12	28.12
469507.6	3764305	851.70	63.03	469390	3764080	471.97	53.80	469360	3764050	393.22	101.45	469300	3765040	163.59	76.40	470500	3764100	62.63	46.97	467400	3764800	28.11	28.11
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TABLE 8.1A.8b
AES Construction Modeling

1-hr NOx Modeled Concentration - Construction Impacts
Receptors distances, original NOx concentrations, adjusted NO2 concentrations

0-100 meters				101-200 meters				201-500 meters				501-1000 meters				1001-2000 meters				2001 + meters			
x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2
469330	3764530	1133.00	83.87	469330	3764830	783.25	89.29	469385.5	3764339	528.16	136.27	469420	3765250	240.71	112.41	470500	3764600	109.36	82.02	471500	3764500	45.37	45.37
469510	3764740	1125.03	83.25	469360	3764830	781.25	89.06	469507.9	3764334	517.84	133.60	469450	3765250	240.25	112.20	470500	3764500	108.36	81.27	471500	3764600	45.16	45.16
469510	3764530	1121.76	83.01	469510	3764440	776.54	88.53	469420	3764950	502.86	129.74	469450	3764020	239.52	111.86	470500	3764800	107.74	80.81	471500	3764400	45.04	45.04
469330	3764740	1121.35	82.98	469390	3764830	776.04	88.47	469390	3764950	502.63	129.68	469480	3765250	239.39	111.79	469500	3763500	104.91	78.68	471500	3764300	44.68	44.68
469509.9	3764534	1113.20	82.38	469510	3764830	775.55	88.41	469386.3	3764323	502.24	129.58	469390	3764020	239.20	111.71	469420	3764020	239.10	111.66	469300	3763500	104.31	78.23
469338.7	3764537	1112.18	82.30	469480	3764830	773.53	88.18	469450	3764950	502.15	129.55	469420	3764020	239.10	111.66	469360	3763250	239.02	111.62	469600	3763500	103.22	77.42
469512	3764735	1111.33	82.24	469420	3764830	772.75	88.09	469480	3764950	501.19	129.31	469390	3765250	238.70	111.47	468300	3764600	102.75	77.07	469600	3762500	44.15	44.15
469345.7	3764736	1097.69	81.23	469450	3764830	772.01	88.01	469510	3764950	500.52	129.14	469480	3764020	238.46	111.36	469400	3763500	102.63	76.97	471500	3765000	44.07	44.07
469360	3764740	1086.38	80.39	469540	3764830	768.09	87.56	469330	3764440	767.97	87.55	469330	3764950	496.84	128.19	469360	3764020	237.98	111.14	468300	3764700	102.55	76.92
469509.6	3764506	1083.12	80.15	469360	3764440	767.61	87.51	469360	3764320	496.35	128.06	469330	3765250	236.73	110.55	470500	3764300	102.37	76.78	467300	3764700	44.00	44.00
469338.5	3764553	1074.36	79.50	469540	3764440	762.30	86.90	469510	3764320	496.05	127.98	469510	3764020	236.41	110.40	469200	3763500	102.11	76.58	469400	3762500	43.93	43.93
469330	3764770	1070.99	79.25	469300	3764830	759.62	86.60	469330	3764320	491.74	126.87	469540	3765250	235.75	110.10	469400	3765800	101.65	76.24	471500	3764200	43.92	43.92
469330	3764560	1069.44	79.14	469300	3764440	750.03	85.50	469540	3764320	488.86	126.13	469330	3764020	235.55	110.00	468300	3764500	101.58	76.18	467300	3764600	43.79	43.79
469330	3764710	1065.33	78.83	469386.7	3764433	742.87	84.69	469300	3764950	486.05	125.40	469510	3765250	234.69	109.60	468300	3764800	101.45	76.09	467300	3764400	43.69	43.69
469364	3764537	1058.98	78.36	469600	3764770	736.02	83.91	469540	3764950	485.24	125.19	469540	3764020	234.57	109.54	469700	3763500	100.97	75.73	467300	3764900	43.60	43.60
469339.4	3764715	1058.17	78.30	469600	3764440	731.77	83.42	469300	3764320	483.28	124.69	469300	3765250	233.84	109.20	469500	3765800	100.75	75.57	469400	3766800	43.57	43.57
469480	3764740	1057.37	78.25	469570	3764830	728.79	83.08	469388.9	3764308	480.90	124.07	469300	3764020	233.63	109.11	469570	3765250	235.75	110.10	468300	3764400	100.17	75.13
469510	3764500	1055.45	78.10	469570	3764440	724.91	82.64	469507.9	3764950	479.00	123.58	469570	3765250	232.89	108.76	469600	3765800	99.78	74.84	469800	3762500	43.43	43.43
469510	3764770	1052.19	77.86	469600	3764710	719.81	82.06	469270	3764950	474.12	122.32	469270	3764020	231.46	108.09	469100	3763500	99.48	74.61	467300	3764300	43.34	43.34
469484.3	3764735	1051.32	77.80	469600	3764530	719.09	81.98	469570	3764320	474.10	122.32	469270	3764020	230.09	107.45	468300	3764900	99.39	74.54	469600	3766800	43.32	43.32
469360	3764770	1050.42	77.73	469600	3764560	715.56	81.57	469507.6	3764305	474.10	122.32	470020	3764620	229.39	107.13	468200	3765800	99.10	74.32	471500	3764100	43.58	43.58
469388.6	3764511	1049.98	77.70	469600	3764680	712.53	81.23	469270	3764320	470.09	121.28	469270	3765250	229.22	107.05	469700	3765800	97.90	73.43	467300	3765000	43.22	43.22
469330	3764500	1047.98	77.55	469600	3764590	710.60	81.01	469600	3764950	462.54	119.34	469600	3765250	228.48	106.70	469800	3763500	97.81	73.36	467300	3764500	43.20	43.20
469373.4	3764736	1045.76	77.39	469600	3764500	710.53	81.00	469392.8	3764293	460.88	118.91	470020	3764590	228.48	106.70	469600	3764500	96.33	72.24	469900	3762500	42.91	42.91
469321.9	3764570	1040.24	76.98	469600	3764650	709.06	80.83	469420	3764980	460.84	118.90	470020	3764560	227.84	106.40	468300	3764300	97.39					

TABLE 8.1A.8c
AES Construction Modeling

1-hr NOx Modeled Concentration - Overlap Impacts
Receptors distances, original NOx concentrations, adjusted NO2 concentrations

0-100 meters				101-200 meters				201-500 meters				501-1000 meters				1001-2000 meters				2001 + meters			
x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2	x	y	NOx	NO2
469330	3764530	1090.97	80.73	469300	3764530	935.53	106.53	469210	3764500	580.33	149.72	468910	3764620	258.25	120.60	468400	3764600	113.57	85.18	467400	3764700	47.10	47.10
469330	3764740	1085.62	80.34	469300	3764500	925.70	105.53	469210	3764530	579.57	149.53	468910	3764650	258.23	120.59	468400	3764700	113.50	85.13	467400	3764400	46.68	46.68
469510	3764740	1082.98	80.14	469300	3764770	919.64	104.84	469210	3764560	575.45	148.47	468910	3764590	257.82	120.40	468400	3764800	112.20	84.15	467400	3764600	46.62	46.62
469510	3764510	1079.76	79.90	469300	3764740	916.59	104.49	469210	3764770	572.86	147.80	468910	3764680	257.28	120.15	468400	3764500	111.69	83.77	467400	3764800	46.60	46.60
469509.9	3764534	1071.52	79.29	469300	3764560	911.65	103.93	469210	3764740	572.47	147.70	468910	3764560	256.85	119.95	468400	3764400	110.11	82.58	467400	3764900	46.53	46.53
469338.7	3764537	1070.53	79.22	469300	3764710	898.17	102.39	469210	3764590	571.59	147.47	468910	3764710	256.74	119.90	468400	3764900	109.81	82.35	467400	3764500	46.37	46.37
469512	3764735	1069.83	79.17	469300	3764590	888.03	101.24	469210	3764470	570.96	147.31	468910	3764740	255.00	119.08	470500	3764600	107.09	80.31	467400	3764300	46.24	46.24
469345.7	3764736	1067.87	79.02	469300	3764680	879.46	100.26	469210	3764710	570.15	147.10	468910	3764530	254.97	119.07	468400	3764300	106.95	80.22	467400	3765000	46.12	46.12
469360	3764740	1060.90	78.51	469300	3764620	866.73	98.81	469210	3764620	568.77	146.74	468910	3764770	253.21	118.25	468400	3765000	106.46	79.85	467400	3764200	45.77	45.77
469330	3764770	1047.53	77.52	469300	3764650	862.38	98.31	469210	3764680	568.36	146.64	468910	3764500	253.15	118.22	470500	3764500	106.24	79.68	467400	3765100	45.73	45.73
469509.6	3764506	1046.63	77.45	469300	3764800	844.71	96.30	469210	3764650	567.62	146.45	468910	3764800	250.58	117.02	469400	3765800	105.62	79.21	471500	3764500	45.60	45.60
469360	3764770	1045.96	77.40	469300	3764470	824.54	94.00	469210	3764800	566.20	146.08	468910	3764470	250.46	116.97	470500	3764800	105.57	79.18	469400	3766800	45.58	45.58
469360	3764530	1045.35	77.36	469300	3764830	794.11	90.53	469210	3764440	549.11	141.67	469420	3765250	247.53	115.60	469300	3765800	104.90	78.67	471500	3764400	45.43	45.43
469390	3764770	1034.85	76.58	469300	3764830	792.65	90.36	469210	3764830	548.19	141.43	468910	3764830	247.17	115.43	469500	3765800	103.99	78.00	469600	3766800	45.32	45.32
469338.5	3764553	1034.13	76.53	469420	3764830	790.09	90.07	469210	3764860	521.10	134.44	468910	3764440	246.98	115.34	470500	3764400	103.36	77.52	469200	3766800	45.19	45.19
469330	3764710	1030.08	76.23	469300	3764830	785.63	89.56	469210	3764410	517.64	133.55	469360	3765250	246.47	115.10	469200	3765800	102.99	77.25	467400	3764100	45.15	45.15
469330	3764560	1029.40	76.18	469450	3764830	785.05	89.50	469180	3764530	515.80	133.08	469390	3765250	246.28	115.01	469600	3765800	102.58	76.94	471500	3764600	45.09	45.09
469420	3764770	1027.65	76.05	469270	3764500	779.55	88.87	469390	3764950	515.64	133.03	469450	3765250	245.87	114.82	468400	3764200	102.39	76.79	469500	3766800	45.08	45.08
469339.4	3764715	1025.34	75.87	469480	3764830	777.58	88.64	469180	3764500	515.31	132.95	469480	3765250	244.68	114.27	468400	3765100	102.21	76.66	471500	3764000	45.02	45.02
469510	3764500	1023.97	75.77	469270	3764530	777.03	88.58	469420	3764950	514.44	132.73	469330	3765250	244.09	113.99	470500	3764300	101.21	75.91	469100	3766800	44.91	44.91
469373.4	3764736	1023.28	75.72	469270	3764770	767.42	87.49	469180	3764560	513.56	132.50	468910	3764860	243.52	113.72	468300	3764600	100.71	75.53	471500	3764300	44.84	44.84
469450	3764770	1022.88	75.69	469270	3764560	765.09	87.22	469360	3764950	513.51	132.49	468880	3764620	243.13	113.54	469700	3765800	100.65	75.49	467400	3765200	44.84	44.84
469390	3764740	1019.91	75.47	469270	3764740	763.24	87.01	469180	3764590	511.07	131.86	468880	3764650	243.12	113.54	468300	3764700	100.54	75.40	469300	3766800	44.83	44.83
469364	3764537	1019.33	75.43	469510	3764830	762.43	86.92	469450	3764950	510.70	131.76	468880	3764590	242.65	113.32	468300	3764500	99.74	74.80	471500	3764200	44.57	44.57
469480	3764770	1018.34	75.36	469270	3764710	755.35	86.11	469180	3764740	510.56	131.72	468910	3764410	242.62	113.30	468300	3764800	99.57	74.68	46			